

What is claimed is:

- 1 1. A method of predicting problems in an automated dialog with a user
2 based on the user's input communications, comprising:
3 determining whether a probability of conducting a successful dialog
4 with the user exceeds a first threshold, a successful dialog being a dialog
5 exchange between an automated dialog system and the user that results in at
6 least one of processing of the user's input communication and routing the user's
7 input communication, wherein if the first threshold is exceeded, further dialog is
8 conducted with the user.
- 1 2. The method of claim 1, wherein if the first threshold is not
2 exceeded, the user is routed to a human for assistance.
- 1 3. The method of claim 1, further comprising:
2 determining whether a probability of conducting a successful dialog
3 with the user exceeds a second threshold, the second threshold being greater
4 than the first threshold, wherein if the second threshold is exceeded, further
5 dialog is conducted with the user using a current dialog strategy.
- 1 4. The method of claim 3, wherein if the second threshold is not
2 exceeded, further dialog is conducted with the user using an adapted dialog
3 strategy.
- 1 5. The method of claim 4, wherein the adapted dialog strategy
2 includes one of prompting the user with choices and prompting the user to
3 confirm the recognition and understanding data.
- 1 6. The method of claim 1, wherein the user's input communication
2 includes at least of verbal and nonverbal communications.
- 1 7. The method of claim 6, wherein the nonverbal communications
2 include at least one of gestures, body movements, head movements, non-
3 responses, text, keyboard entries, keypad entries, mouse clicks, DTMF codes,
4 pointers, stylus, cable set-top box entries, graphical user interface entries, and
5 touchscreen entries.
- 1 8. The method of claim 1, wherein the method is used for customer
2 care purposes.

1 9. The method of claim 1, wherein the probability is determined using
2 recognition and understanding data derived from the user's input communication.

1 10. The method of claim 1, wherein the probability is determined using
2 dialog training data stored in a dialog training database, the dialog training data
3 including at least one of dialog classification models and extracted dialog
4 features.

1 11. The method of claim 10, wherein the extracted dialog features are
2 derived from recognition, understanding and dialog data.

1 12. The method of claim 1, further comprising:
2 storing a first dialog exchange in a dialog history database, wherein
3 the first dialog exchange includes a first automated dialog output and a first
4 user's input communication and the further dialog conducted with the user results
5 in a second dialog exchange, wherein the second dialog exchange includes a
6 second dialog output and a second user's input communication; and
7 determining whether the probability of conducting a successful
8 dialog with the user exceeds the first threshold using the first dialog exchange
9 and the second dialog exchange.

1 13. The method of claim 12, wherein the method is recursive in that the
2 determining step determines the probability of conducting a successful dialog
3 with the user exceeds the first threshold using the each of the dialog exchanges
4 conducted.

1 14. The method of claim 1, further comprising:
2 receiving the user's input communication;
3 recognizing portions of the user's input communication; and
4 providing an input to the dialog predictor based on applying a
5 confidence function to the recognized portions of the user's input communication.

1 ~~15.~~ An automated dialog problem prediction system that predicts
2 problems in an automated dialog with a user based on the user's input
3 communications, comprising:

4 a dialog manager that output dialog to the user;

5 a dialog predictor that determines whether a probability of
 6 conducting a successful dialog with the user exceeds a first threshold, a
 7 successful dialog being a dialog exchange between an automated dialog system
 8 and the user that results in at least one of processing of the user's input
 9 communication and routing the user's input communication, wherein if the first
 10 threshold is exceeded, the dialog predictor prompts the dialog manager to
 11 conduct further dialog with the user.

1 16. The system of claim 15, wherein if the first threshold is not
 2 exceeded, the dialog predictor prompts the dialog manager to route the user to a
 3 human for assistance.

1 17. The system of claim 15, wherein the dialog predictor determines
 2 whether a probability of conducting a successful dialog with the user exceeds a
 3 second threshold, the second threshold being greater than the first threshold,
 4 and if the second threshold is exceeded, the dialog predictor prompts the dialog
 5 manager to conduct further dialog with the user using a current dialog strategy.

1 18. The system of claim 17, wherein if the second threshold is not
 2 exceeded, the dialog predictor prompts the dialog manager to conduct further
 3 dialog with the user using an adapted dialog strategy.

1 19. The system of claim 18, wherein the adapted dialog strategy
 2 includes one of prompting the user with choices and prompting the user to
 3 confirm the recognition and understanding data.

1 20. The system of claim 15, wherein the user's input communication
 2 includes at least of verbal and nonverbal communications.

1 21. The system of claim 15, wherein the system is used for customer
 2 care purposes.

1 22. The system of claim 15, wherein the dialog predictor determines
 2 the probability using recognition data provided by a recognizer and
 3 understanding data provided by a language understanding unit, and the
 4 recognition and understanding data is derived from the user's input
 5 communication.

1 23. The system of claim 15, further comprising a dialog training
2 database for storing dialog training data, wherein the dialog predictor determines
3 the probability using the dialog training data stored in a dialog training database,
4 the dialog training data including at least one of dialog classification models and
5 extracted dialog features.

1 24. The system of claim 23, wherein the extracted dialog features are
2 derived from recognition, understanding and dialog data.

1 25. The system of claim 15, further comprising:
2 a dialog history database that stores a first dialog exchange,
3 wherein the first dialog exchange includes a first automated dialog output and a
4 first user's input communication, and the further dialog conducted with the user
5 results in a second dialog exchange, the second dialog exchange including a
6 second dialog output and a second user's input communication, and the dialog
7 predictor determining whether the probability of conducting a successful dialog
8 with the user exceeds the first threshold using the first dialog exchange and the
9 second dialog exchange.

1 26. The system of claim 25, wherein the dialog predictor determines
2 whether the probability of conducting a successful dialog with the user exceeds
3 the first threshold using the each of the dialog exchanges conducted.

1 27. The system of claim 15, further comprising:
2 a recognizer that recognizes the user's input communication; and
3 a language understanding unit that applies a confidence function to
4 the recognized portions of the user's input communication and provides an input
5 to the dialog predictor.

1 28. A method of predicting problems in an automated dialog with a user
2 based on the user's input communications, comprising:

3 determining whether a probability of conducting a successful dialog
4 with the user exceeds a first threshold, a successful dialog being a dialog
5 exchange between an automated dialog system and the user that results in at
6 least one of processing of the user's input communication and routing the user's

7 input communication, wherein if the first threshold is exceeded, further dialog is
8 conducted with the user, otherwise, the user is routed to a human for assistance;
9 determining whether a probability of conducting a successful dialog
10 with the user exceeds a second threshold, the second threshold being greater
11 than the first threshold, wherein if the second threshold is exceeded, further
12 dialog is conducted with the user using a current dialog strategy, otherwise
13 further dialog is conducted with the user using an adapted dialog strategy.

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